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# The Innovation Economy

## *Recovery or Reinvention?*

***The Role of Higher Education  
in Economic Vitality***  
*July 28, 2009*

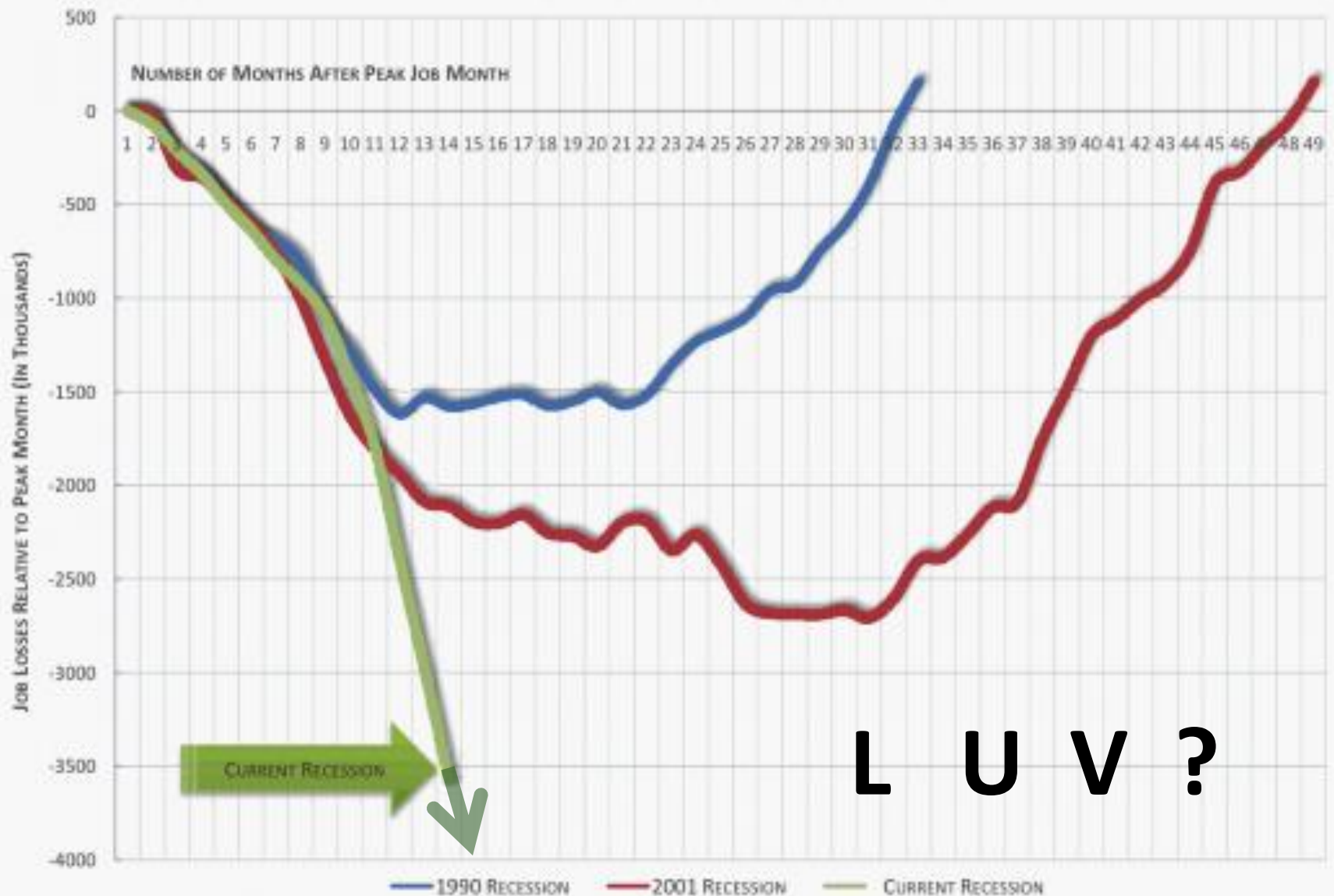
**Egils Milbergs**

Washington Economic Development Commission

[www.wedc.wa.gov](http://www.wedc.wa.gov)

[www.innovate.typepad.com](http://www.innovate.typepad.com)

# JOB LOSSES IN RECENT RECESSIONS



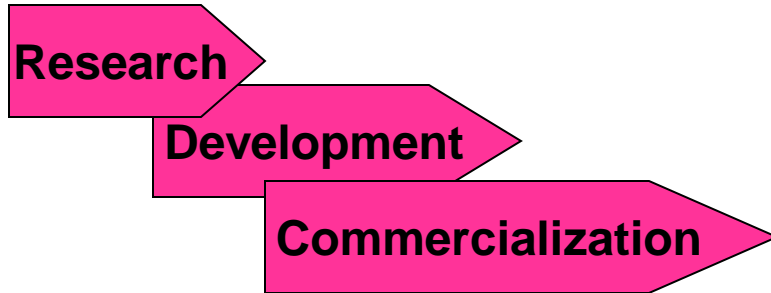
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# Shifting of Competitive Advantage

- 1960s & 1970s                      *Advantage is Cost*  
Strategy is “Making it cheaper”
- 1980s & 1990s                      *Advantage is Quality*  
Strategy is “Making it better”
- 2000s                                      *Advantage is Innovation*  
Strategy is “Making something different”

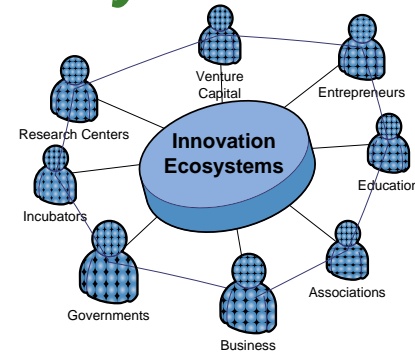
# Nature of Innovation is Changing

## *Linear Model*



- Single discipline
- Hierarchical governance
- Closed system
- Internal talent
- Controlled process
- IP hoarded
- Product centric
- Forecasting demand

## *Ecosystem Model*



- Multidisciplinary
- Self organizing relationships
- Open innovation
- Access talent everywhere
- IP commons
- Customer centric
- Sense and respond

# Ten Year Vision

Make Washington State the most attractive, creative and fertile investment environment for innovation in the world as a means of achieving long term global competitiveness prosperity and economic opportunity for all the state's citizens.



*...with change occurring at mind-boggling speed, we can't rest on our laurels, so let's commit today to grooming a workforce and leaders who are agile, creative, and embrace innovation.*

**Gov. Chris Gregoire**  
**March 10, 2009**

***We must look over the horizon and prepare for the new economy that will emerge when this recession passes. Simply put, we must re-build, re-tool and re-invent our national strategies for sustained economic success.***

**Commerce Secretary Gary Locke**  
**Former Gov. Washington State**  
**March 18, 2009**

# New Model for Economic Development

*Strategize*

*Organize*

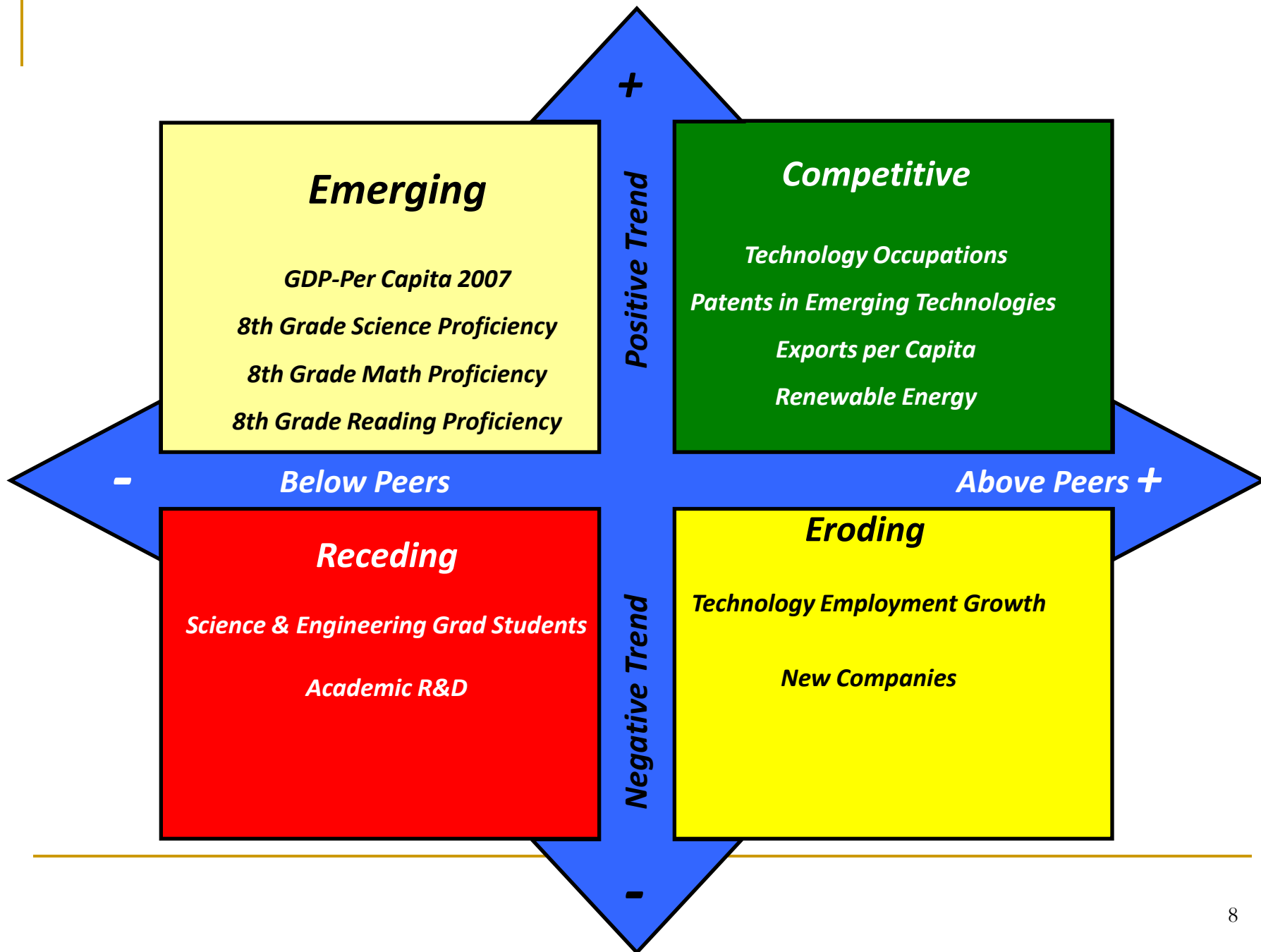
*Operationize*

Traditional Model	Innovation Driven Model
Attract and retain companies	Invest in talent, ideas and infrastructure
Jobs	Quality of jobs, per capita incomes
Lowest cost of business inputs	Higher value inputs, increasing productivity and outcomes
Top down economic development	Bottom-up and organic growth
Competing regions: zero sum game	Collaborating regions: value creation
Closed linear innovation system	Open innovation ecosystem
Locally focused clusters	Globally focused clusters

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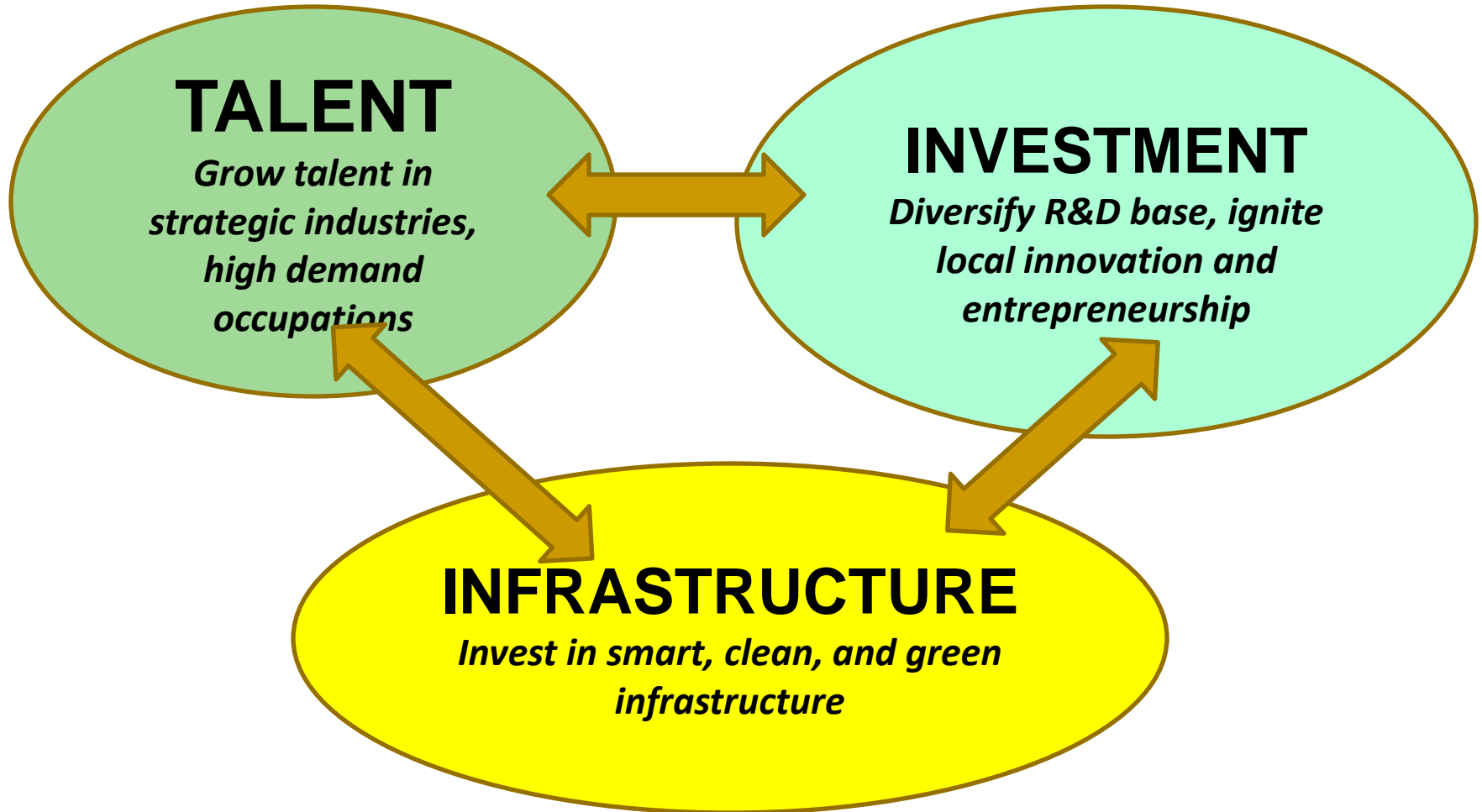
# Where WA stands (GSP Consulting)

- Indicators organized by context
  - Innovation
  - Vitality
  - Socio-Ecology
- Use of US and global benchmarks provide comparison: identify strengths and weakness
- Minnesota, Massachusetts, Oregon, Texas.
- Also, Korea, New Zealand, Sweden





# Strategy



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# Higher education relevance for innovation

- Education and training of future workforce
  - Intellectual capital: publications and patents
  - Knowledge exchange infrastructure
  - Problem solver
    - Research performer
    - Business incubators
    - Technical assistance
    - Cooperative R&D centers
  - New platforms for growth
    - Technology transfer
    - Entrepreneurs in Residence
    - Innovation Research Teams (STARS)
    - Innovation Partnership Zones (IPZs)
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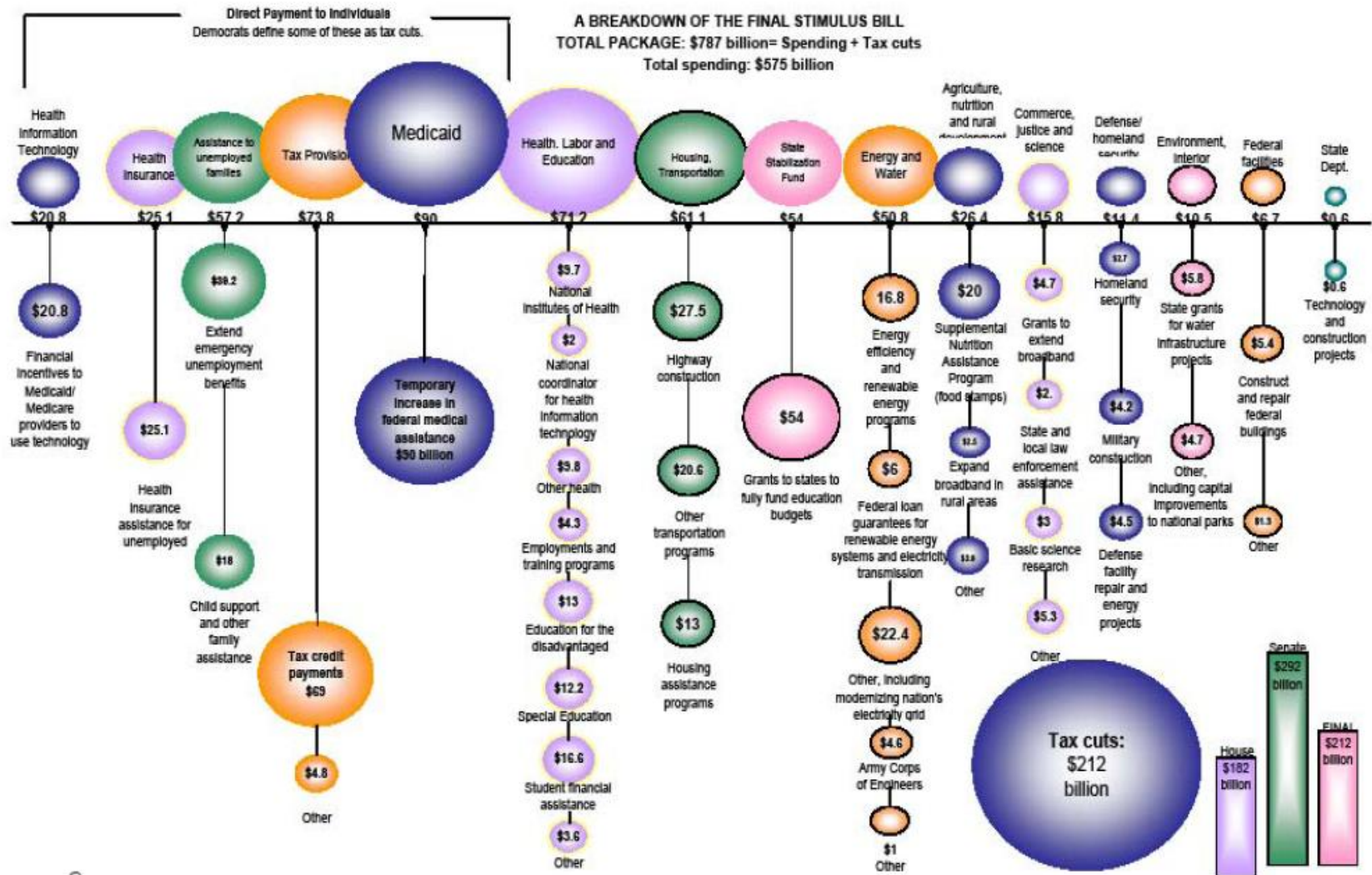
## ***DRAFT** Performance Metrics for the STARS Program*

Metric
<b>Recruiting</b>
# of IRT researchers recruited
# of IRT researchers hired
Size of IRT teams
<b>Activity</b>
# of scholarly publications
# of inter-institutional collaborations
# of Entrepreneurs in Residence
<b>Impact</b>
Research dollars from federal sources and foundations
Research dollars from industry
Tech startups based on IRT technology
First-round investment in tech startups
Total investment in tech startups
Licenses of IRT technology to third parties
<b>Review</b>
Satisfaction survey
Jobs created

## ***DRAFT Performance Metrics for the IPZ Program***

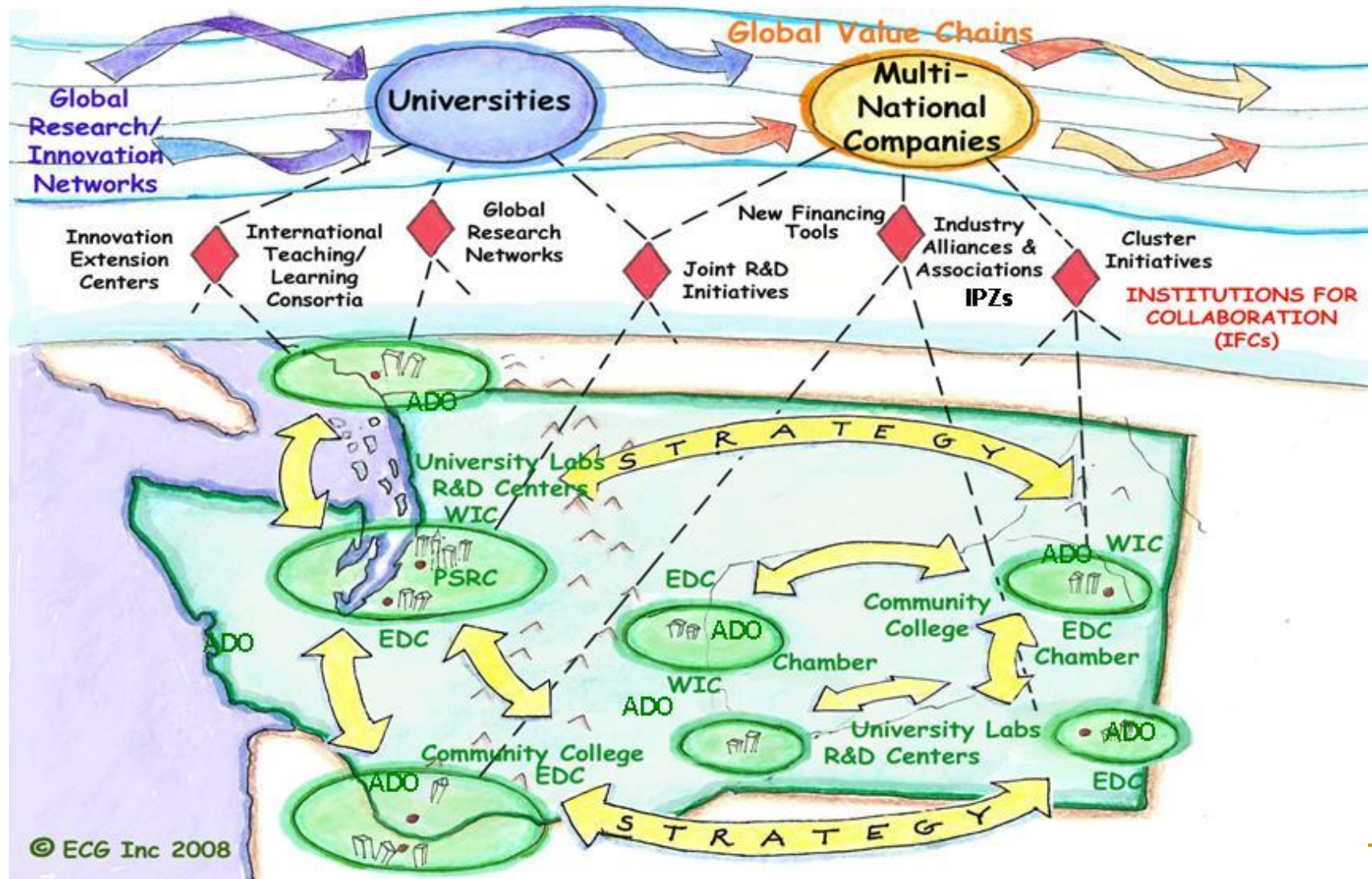
- **Additional investment**
  - Private sector investment
  - Investment from outside the zone
- **Job creation / retention:**
  - # of jobs created
  - # of jobs retained within wage range
- **Increased commercialization activity**
  - \$ increase in sales or sales orders associated with IPZ research
- **# of licenses, patents, applications for innovation research**
- **Increased collaboration and/or community partnerships**
  - Zone-hosted conferences, creation of incubator, visiting scholars
- **Unique criteria:**
  - Formation of an advisory board
  - Incorporation as a non-profit
  - Launching and IPZ website
  - Creation of tailored curriculum

# Leveraging ARRA for innovation





# The world's largest *Innovation Ecosystem*?





### **Talent and Workforce**

- Supply of middle skills
- S&E attainment
- Verbal, math, science proficiency
- Educational attainment
- R&D personnel
- Life long learning

### **Entrepreneurship and Investment**

#### **Entrepreneurship**

- University R&D
- Private R&D intensity
- Intellectual property generated

#### **Company startup**

#### **Investment**

- Equity investment
- Federal investment
- Foreign capital attracted

### **Infrastructure**

#### **Transport**

- Freight
- Information delivery

#### **Commuting**

#### **Business Climate**

- Cost of business
- Business attractiveness

*allows investment in*

### **Business Performance**

*leads to*

### **Economic Growth and Competitiveness**

### **Increased, Better Employment**

- Income growth
- Employment
- Reduced income disparity

### **Competitive Companies**

- Market share
- Productivity growth
- Trade growth
- High impact firms
- Profitability

### **Wealth Generated**

- GDP by state
- Standard of living

### **Increased State Revenue**

- Aligned policy & investment
- State revenue generated

## **Economic Growth And Vitality: Metrics for Washington state**



**The best way to predict the future is to invent it.**





# INNOVATION BENCHMARKS WASHINGTON STATE

JUNE 2008

# Benchmarks

- Minnesota: comparable in economic development investment levels
- Massachusetts is a similarly sized economy but invests more heavily in innovation
- Oregon is a geographic peer with a similar commitment to the environment and renewable energy.
- Texas lacks many of the inputs and assets of other innovation leaders

# International

## ■ Korea

- ❑ Technology base developed from automotive manufacturing, Asia-Pacific location, high per capita exports

## ■ New Zealand

- ❑ Asia-Pacific location, strong export market, emphasis on renewable energy

## ■ Sweden

- ❑ European location, emphasis on innovation and sustainability

- Long term growth has been steady
  - Boom and bust is less extreme
  - Economy is more diverse
- Rapid growth in technology
  - Jobs, Workforce, New Companies and Patents in Emerging Technologies
- Strong exporting activity
  - The growing Pacific markets that trade with WA businesses are more important than what or how much it sells

- Increase University R&D
  - Total volume of research funding at universities is low (although the *share* is above average)
  - Not enough graduate students (need to attract technology workers in an increasingly competitive environment).
- Improve proficiency in secondary math and science
  - WA students perform better than the U.S. but worse than the international students

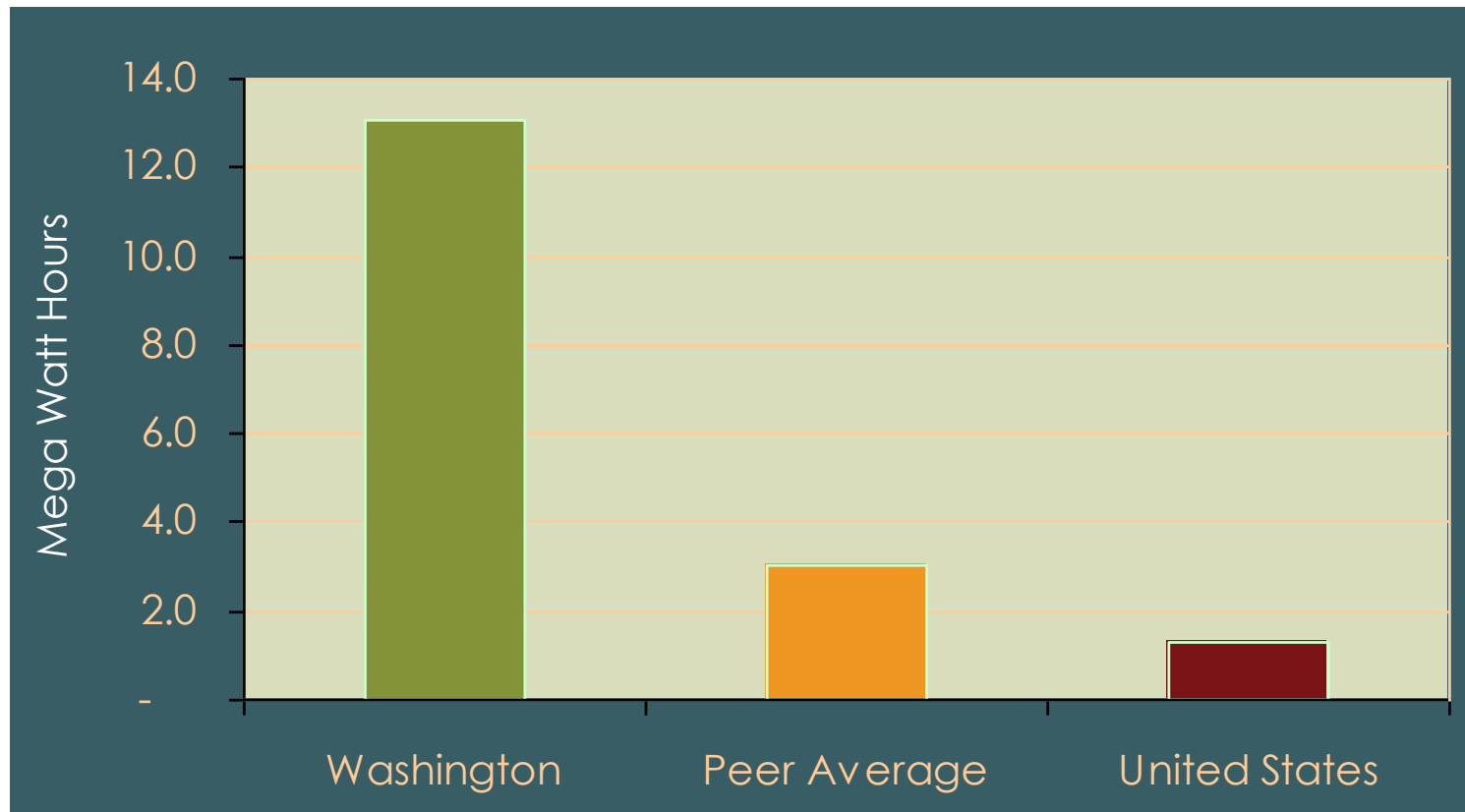
- Financing for small firms is not abundant
  - The new firms may be bootstrapped or get investment from friends and family
  - More of the Start-ups could be in less capital intensive industries

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# Clear Strengths

Washington Innovation Benchmarks

# Renewable Energy

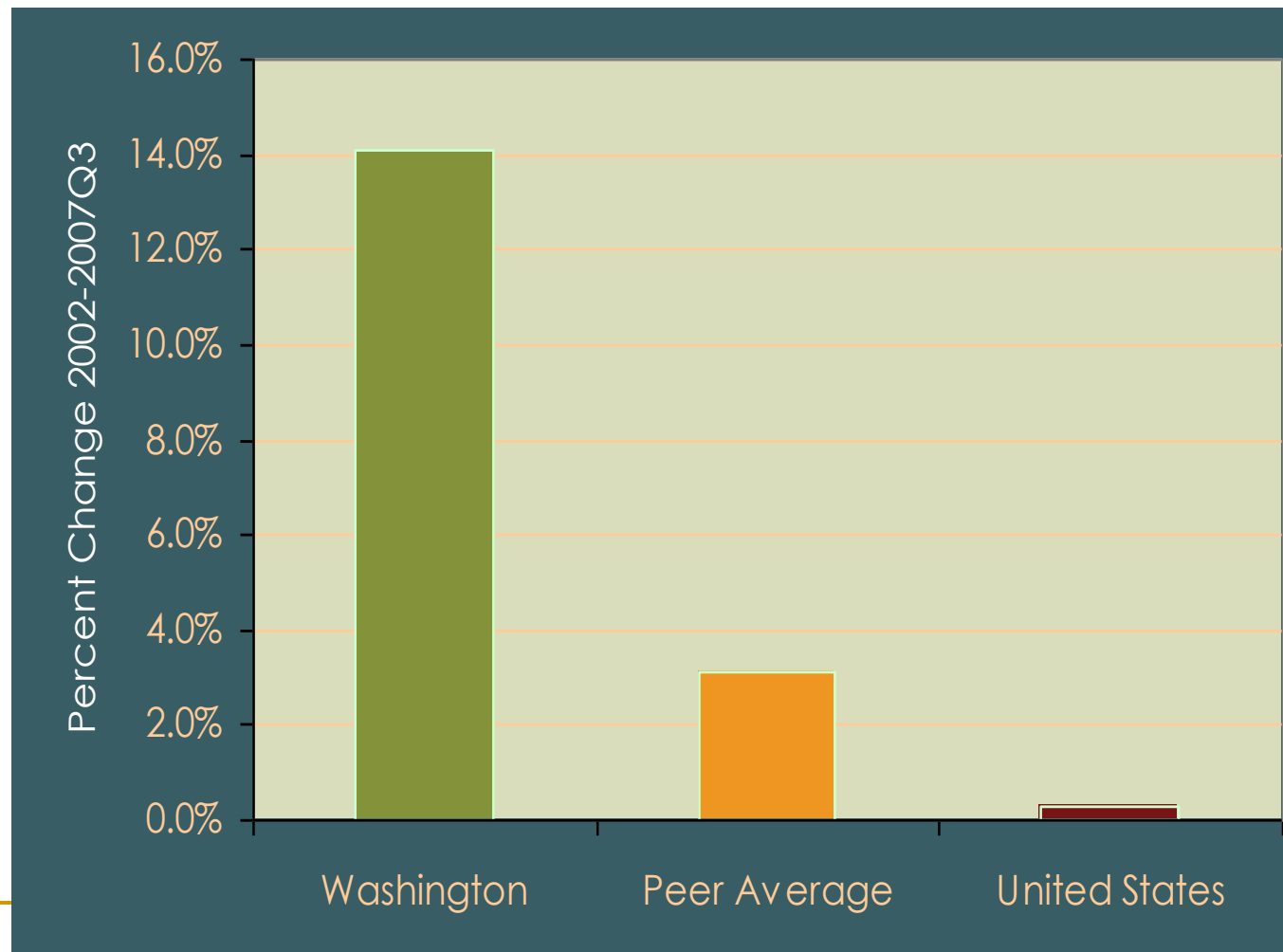




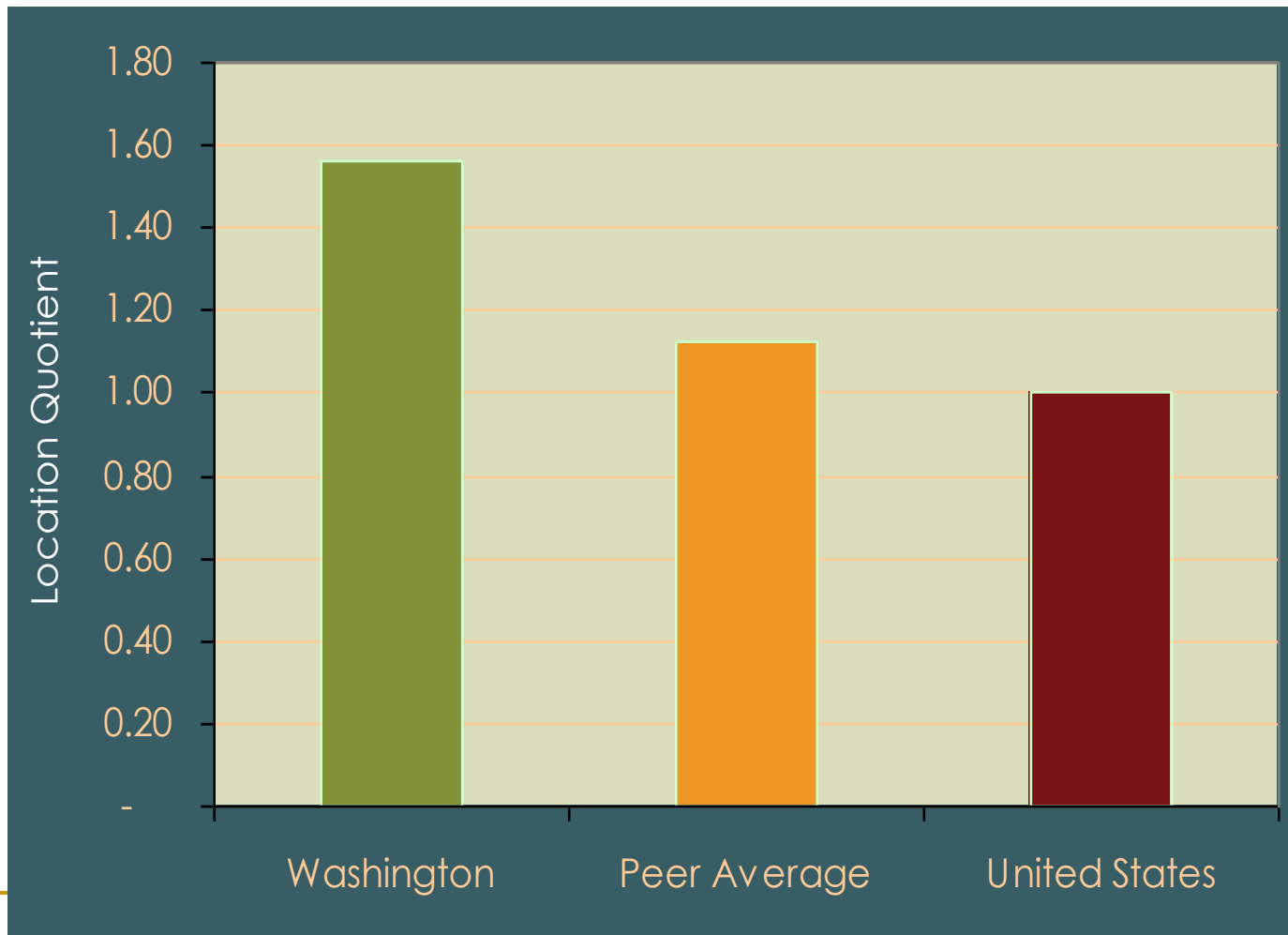
# Export Markets

Washington Exports Top 5 Markets - Share of U.S. Exports, 2005-2007	
India	33%
Ireland	27%
China	15%
Japan	12%
Canada	3%

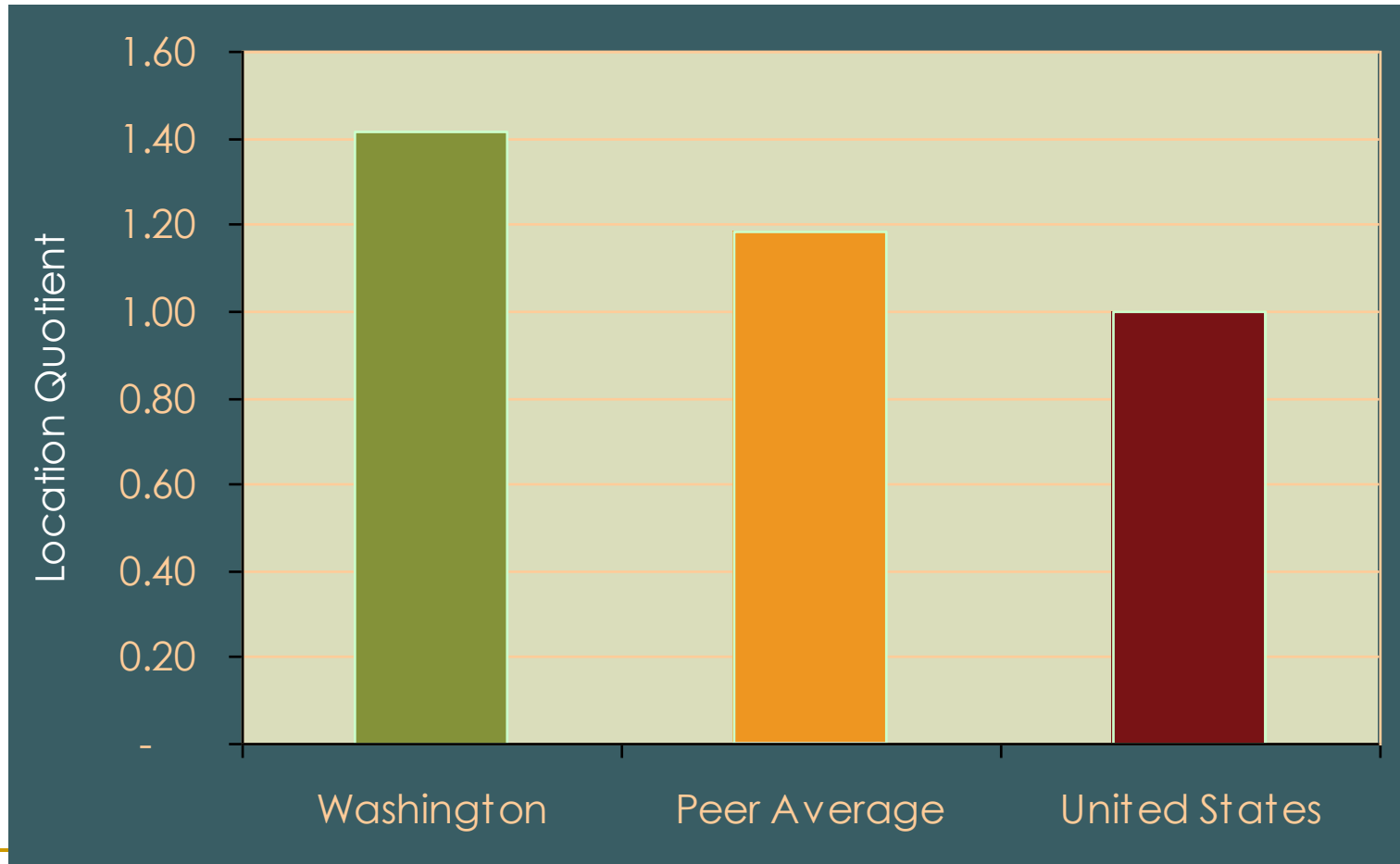
# Tech Employment Growth



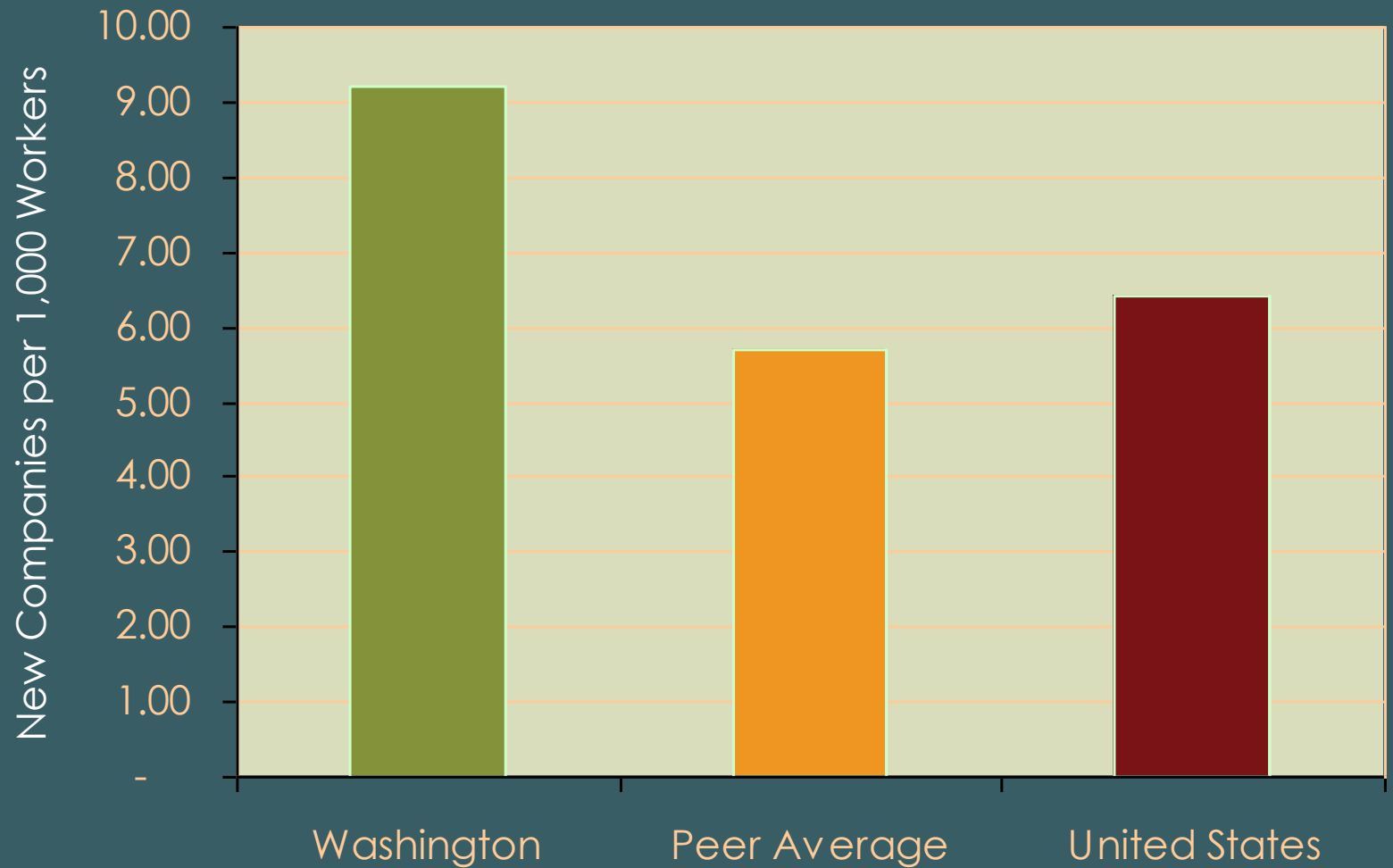
# Patents-Emerging Technologies



# Technology Occupations



# New Companies

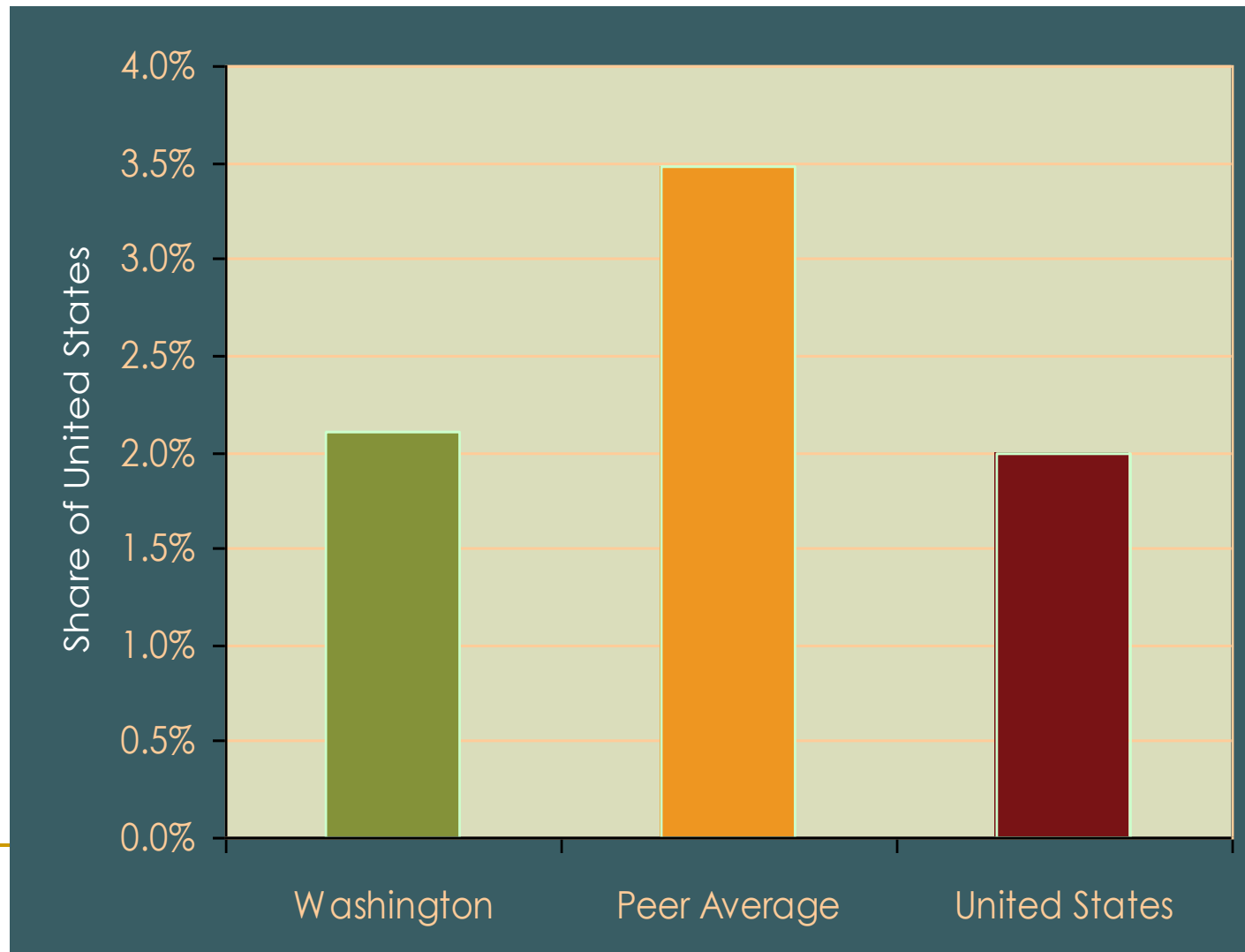


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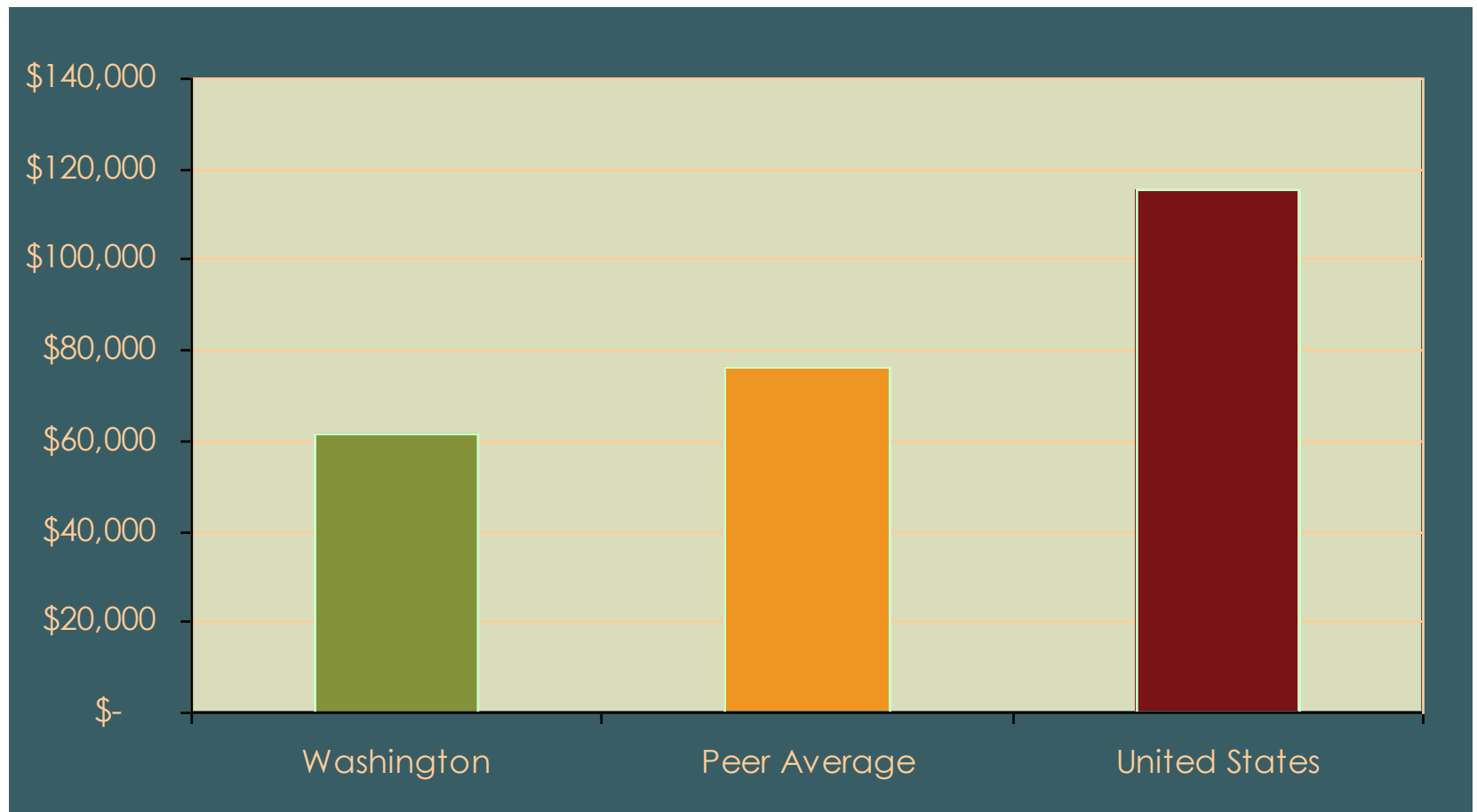
# Clear Weaknesses

Washington Innovation Benchmarks

# Share of Academic R&D



# Small Business Loans





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## ■ Potential Weaknesses

- ❑ Share of Science & Engineering Grad Students
- ❑ Venture Capital Recipients
- ❑ GDP per Capita
- ❑ Science, Math, and Reading Proficiency
- ❑ High Wage Jobs